MARINE MAMMAL COMMISSION
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5 June 2001

Ms. Donna S. Wieting
Chief, Mar&e Mammal Division
National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway, Room 13635
Silver Spring, MD 20910

Dear Ms. Wieting:

Under section 101(a)(5) of the Marine Mammal Protection Act, the U.S. Navy has requested from the National Marine Fisheries Service a letter of authorization for the take of small numbers of marine mammals by harassment incidental to operations of Surveillance Towed Array Sensor System Low Frequency Active (SURTASS LFA) Sonar. The Marine Mammal Commission, in consultation with its Committee of Scientific Advisor-s, has reviewed the Service's 19 March 2001 Proposed Rule for this activity, and offers the following comments. The Service's *Federal Register* notice includes, by reference, the information; contained in the *Final Overseas Environmental Impact Statement and Environmental Impact Statement* [FEIS] *for Surveillance Towed Array Sensor System Low Frequency Active Sonar,* dated January 2001. Asthe Service's proposed rule relies on the FEIS far its interpretation and justification, the Commission incorporates by reference its previous comments on the Draft Environmental Impact Statement (see enclosed letter of 27 'October 1999) and requests that those comments also be addressed in the Service's final rule.

To issue the requested small-take authorization for the Navy's operations, the Service must find that the specified activity wil.l occur within a specified geographic region, will take only small numbers of marine mammals of a species or stock, and will have a negligible impact on such species or ..... . The Service also must find that the activity will have no unmitigable adverse impact on the availability of such species or stock for subsistence taking by Alaska Natives. In addition, the Service must prescribe regulations setting forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar biological significance. Finally, the Service must prescribe regulations setting forth requirements pertaining to

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the monitoring and reporting of such taking. These requirements are addressed below, in the specific comments appended to this letter, and in our-27 October 1999 letter commenting on the Draft Environmental Impact **Statement.**

Geographic Specificity

Section 101(a)(5)(A) of the Marine Mammal Protection Act specifies that incidental taking authorizations under this provision are limited to activities-that occur in a "specified geographic region." The Service addresses this requirement in its response to comment 10 of the proposed rule (pp. 15377-15378), in which it cites pertinent legislative history: "It is the intention of the Committee that both the specified activity and the specified region referred to in section 101(a)(5) be narrowly identifed so that the anticipated effects will be substantially similar." The Service proposes to meet the statutory requirement by dividing the world's oceans into 16 operating areas, concluding that the 16 areas have sufficiently "similar characteristics, both biological and otherwise," so that the anticipated effects throughout each area willbe substantially similar and therefore qualify them as specific geographical regions for purposes of section 101(a)(5)(A). In reaching this conclusion, the Service makes only broad statements regarding the geographic similarities and provides no analyses specific to any of the regions to support its conclusion+

The Marine Mammal Commission believes that important differences exist among and within these different regions, and that effects also may vary significantly among and within regions. For example, different marine mammal species may be taken, ranging from severely endangered species, such **as** right whales and the Hawaiian monk seal, to species whose populations are considered healthy and more stable, such as the gray whale and California sea lion. Similarly, marine mammal habitats potentially disturbed by SURTASS LFA operations may vary in significance from relatively unimportant areas to areas important to feeding and vital for migration, reproduction, or other functions. Many of the proposed regions include both temperate and tropical waters and, in all cases, they include coastal as well as'pelagic habitats, As such, it is not clear that designation of these broad areas is consistent with Congressional expectations that the specified region(s) "be narrowly identified" and that they not include large and

diverse areas such as the entire North American Pacific coast. It also is not clear that the anticipated effects would be similar in any but the most general manner; i.e., marine mammals would be present and taken. As offered in the proposed rule (pp. 15377-15378), the rationale for concluding that the 16 areas constitute specific geographic regions is too general - it glosses over biogeographical variation that is essential to understand (1) the distribution and life history features of the many and varied species that may be affected by SURTASS LFA sonar operations, and (2) the nature and extent of the resulting effects. A more narrow geographic scale would likely enhance assessment of effects based on comparisons of operational areas and non-operational (*i.e.*, control) areas. In view of the extensive uncertainty about the potential effects of SURTASS LFA sonar, more narrowly defined operational areas, coupled with an effective research and monitoring system to detect and assess effects, seem to be necessary for prudent and precautionary development and use of this system.

For the above reasons, the Marine Mammal Commission recommends that the Service describe in the final rule the species assemblages, their biogeography and important life history characteristics, as well as pertinent oceanographic and other physical characteristics of each of the proposed regions in sufficient detail to ascertain whether the effects on the diverse marine mammal assemblages throughout each region would be substantially similar, Such an assessment seems to be an essential prerequisite for determining the similarity and significance of potential SUKTASS LFA effects among and within the identified regions.

Negligible Effects

Section. 101(a) (5) (A)(i) specifies that, before authorizing the incidental taking of marine mammals under this provision, the Service rnust find that "the total of such taking during each five-year (or less) period concerned will have a negligible impact on such species or stock.,.." The applicable regulations define "negligible impact" as "an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or Survival."

The Navy's assessment of SURTASS LFA impacts on marine mammals was based on analyses of the potential biological risk associated with those operations. The Navy defined the potential. biological risk as the probability of injury or behavioral harassment. The Navy estimated the probability of injury based on a study by Ridgway *et* al. (1997) to determine the onset of temporary threshold shift in hearing sensitivity of marine mammals, and it evaluated the probability for significant change in biologically important behaviors based on studies conducted by its Low Frequency Sound Scientific Research Program. The Navy also indicated that the potential for injury would be mitigated by a real-time monitoring or mitigation system to detect marine mammals within an area near LFA sound projectors where received sound levels could be injurious. Similarly, potentially significant changes in biologically important behaviors would be mitigated by a range of geographical constraints; i.e., no operations in the Arctic and Antarctic, no operations in offshore biologically important areas, and limits on operations so that sonar sounds would not exceed 180 dB within 12 nm (22 km) of any mainland or island coastline.

With respect to analyses of pot-ential marine mammal injuries, the Navy and the Service rely heavily on the study by Ridgway et cl. (1997). As discussed below, however, the Marine Mammal Commission is concerned that the results reported in Ridgway et *al.* (1997) may not provide a good model for the onset of temporary threshold shift due to SURTASS LFA operations.

- In this study, bottlenose dolphins were exposed to sounds of one-second duration, whereas marine mammals in the wild would be exposed to SURTASS LFA sounds for 6 to 100 seconds. The significance of this difference in sound duration is not clear, but Ridgway *et al,* (1997) cautioned that it is important to study the onset of temporary threshold shift at different durations, implying that sound duration could be an important factor. In addition, the Navy's consistency determination for offshore waters (cited in the California Coastal Commission's Consistency Determination No. CD-113-00, page 27) states that research on Navy divers resulted in "the establishment of a damage risk threshold of 160 dB received level for less than 2 minutes at one time and for less than 15 minutes a day," which also indicates that sound duration is an important

consideration. Moreover, the FEIS and the **proposed rule** (p. 15386) indicate 'chat sounds of longer duration will lower the threshold of auditory sensitivity so that temporary threshold shift or permanent threshold shift occurs at lower sound pressure or intensity levels. Thus, the available information suggests that sound duration is an important consideration when estimating the onset of temporary threshold shift. However, sound duration does not appear to have been considered by the Navy in estimating the harm threshold of 180 dB, or in its formula for calculating a single ping equivalent.

- The results of Ridgway *et al.* (1997) also were based on exposure to sounds of different frequencies (3, 20, and 7'5 kHz) than those generated by SURTASS LFA operations (0.1 to 0.5 kHz). Again, the significance of this difference is not clear. On the one hand, Ridgway et al. (1997) are cited in the proposed rule to support the estimated 180 dB harm threshold. This implies that frequency either is not an important consideration or that effects of 3-kHz sounds examined in their study provide a reasonable basis for estimating the effects of 0.1- to 0.5-kHz sounds produced by SURTASS LFA sonar. On the other hand, in responding to concerns about recent cetacean strandings in the Bahamas, the Navy suggested that those strandings were not related to SURTASS LFA because the sounds produced were in the range of 3 to 5 kHz (a mid-frequency range) and that "SURTASS LFA sonar is not comparable to those associated with any of the reported strandings {in the Bahamas]" ("SURTASS LFA DOEIS/EIS Review" attachment to 24 August 2000 letter from the Secretary of the Navy to the Chairman of the House Committee on Resources). If the mid-frequency sounds produced in the Bahamas are not a good model of the potential effects of SURTASS LFA because of their higher frequency (i.e., 3-5 kHz), then it would follow that the results of Ridgway et al. (1997), based on 3, 20, and 75 kHz also may not provide a reliable indication of the effects of the SURTASS LFA sonar on marine mammals.

- The onset of temporary threshold shift also is a concern because of its significance for estimating the nature and extent of "take" under the Marine Mammal Protection Act. The Navy defined harm as the onset of temporary threshold shift, and suggested that such a shift would imply injury,

albeit of a non-serious nature.- The Service, on the other hand, is suggesting that temporary threshold shift is not an injury, but rather an impairment, and therefore constitutes only level B harassment. This distinction seems ill-founded. Definitions of "injury" from Webster's Ninth New Collegiate Dictionary (1991) include "hurt, damage, or loss sustained." The onset of temporary threshold shift indicates that physical forces applied to the hearing tissues involved in hearing have been damaged to the/extent that they cannot function normally, thereby compromising the affected marine mammal and placing it at an increased level of risk due to the loss of hearing function. While the dysfunction or impairment is temporary (as are many injuries), it results from damage accrued through exposure to abnormal physical forces resulting from sound production. As marine mammals rely significantly on bearing for avoidance of predators, detection and capture of prey, communication with conspecifics, or other important behaviors that determine their ability to reproduce or survive, they may be seriously disadvantaged by temporary threshold shift, albeit only temporarily.

- The Service also appears to suggest that, as a form of level, B harassment, temporary threshold shift constitutes a reasonable lower limit for the assessment of harassment and, thus, take. This interpretation could undermine meaningful consideration of behavioral effects that occur at sound levels below those that may result in temporary threshold shift. Such effects could involve communication, social arganizatian, foraging, migration, or other important life history traits that can affect reproduction and survival. This de *facto* redefinition of take and harassment and incomplete consideration of behavioral effects would be inconsistent with the statutory definitions of those terms, particularly that defining Level B harassment. Although it may be that these potential behavioral effects have only a negligible impact on the affected species and stocks, they do constitute taking and therefore cannot be ignored.

As discussed below, the Marine Mammal Commission also is concerned with the assessment of the potential behavioral effects in the FEIS arid the proposed. rule.

- The potential for behavioral effects was evaluated by the Navy's' Low Frequency Sound Scientific Research Program, coupled with a review of previous studies. The research program focused on four species: blue and fin whales involved in feeding behaviors, humpback whales involved in reproductive behaviors, and gray whales during migration. The Navy consulted with a range of scientists to identify the species considered most vulnerable to the effects of low frequency sounds as produced by SURTASS LFA operations. While these species may be the most vulnerable to such sounds, our current understanding of the vulnerability of various species, stocks, or sex/age classes is very limited. For example, current scientific information is not sufficient to describe the range of sounds produced and heard by all potentially affected species, stocks, and age/sex classes, nor is it sufficient to describe the psychological, physiological, or behavioral characteristics of each species, stock, or age/sex class that may be affected by low frequency sound. Thus, potential behavioral effects should be evaluated and considered with caution. Our current inability to describe the potential relationship between beaked whale strandings and various sonar systems illustrates the limited extent of current understanding.

- The experiments conducted by the Low Frequency Sound Scientific Research Program and previous research are described by the Navy and the Service, but the information provided often is not sufficient for the reader to understand or judge the merits of the Navy's and Service's conclusions based on their results. For example, with respect to effects on humpback whales, the FEIS and the proposed rule indicate that the whales showed apparent avoidance responses and a cessation of singing behavior during LFA transmissions from 120 to 150 dB, but then appear to diminish this finding by suggesting that this observation pertained to only half of the singing whales. It is not clear why responses in 50 percent of the whales is not considered potentially significant, In addition, although the FEIS describes previous studies suggesting significant behavioral responses to underwater sounds, the FEIS seems to ignore that evidence in forming its conclusions about potential behavioral effects. For example, on pages 4.2-26 to 4.2-29, the FEIS includes (1) a summary statement by Richardson et al, (1995) that

indicates that marine mammals may have a limited tolerance for continuous underwater sound levels at or above 120 dB, (2) a description of significant gray whale responses to continuous sounds of about 120 dB in their migratory path (Malme *et al. 1983,* 1984), (3) a description of behavioral responses of beluga whales to icebreaker noise at 27 nm (50 km:, and (4) a description of avoidance responses of bowhead whales to drill ship noise at received levels of 110 to 132 dB (Richardson et *al.* 1995). This information, combined with the observations of behavioral responses during the Low Frequency Sound Scientific Research Program demonstrate some potential for significant behavioral responses of marine mammals to these sounds. Therefore, a more reasonable conclusion from these results would be that behavioral changes were observed and can be expected, but the available information is not sufficient to assess the significance of those changes, and that more investigation of possible effects is required.

- Importantly, the Low Frequency Sound Scientific Research Program and previous studies (just described) did not assess potential behavioral responses to signals in the range of 150 or 155 dB to 1.80 dB. As decibels measure sound intensity on a logarithmic scale, sound intensities from 150 dB to 180 dB would provide a sound stimulus orders of magnitude greater: than those at lower levels. Although behavioral responses may increase accordingly, the studies conducted to date are not sufficient to describe the nature and degree of behavioral responses that could reasonably be expected from the low frequency sound intensities of the magnitude generated by SURTASS LFA operations. Ridgway *et al.* (1997) described behavioral responses of their four bottlenose dolphins to sound intensities over 180 dB. However, the responses observed in that study are not likely to be good indicators of responses in wild populations because of the captive nature of the study and because that study required considerable management or control of the dolphins' behavior,

- Finally, the Low Frequency Sound Scientific Research Program studies assessed short-term behavioral responses to low frequency sounds, but did not assess long-term responses, In this regard, it is not clear that short-term responses are good indicators of the potential long-

term effects. While marine mammals may not 'exhibit obvious short-term behavioral changes, they may have limited tolerance for long-term stimuli that could affect their reproduction and survival. For example, over time animals may abandon their preferred foraging or breeding grounds or alter the timing or path of their migration to avoid long-term disturbance. At a minimum, it seems important to recognize the limitations or shortcomings of the available information and to adopt correspondingly precautionary management strategies.

In addition to the above, the Marine Mammal Commission is concerned about the potential impact of SURTASS LFA operations when considered in the context of all the other human-related factors that may detrimentally affect marine mammals. The FEIS includes a section on potential cumulative effects that notes recent changes to ambient noise levels in the ocean, operational parameters of the SURTASS LFA sonar system, and the contribution of SURTASS LFA sonar relative to other sources of noise. However, the section does not provide the necessary analyses to assess the combined effect on marine mammals. Because the extent of the impact from SURTASS LFA is, in part, a function of the status and vulnerability of the potentially affected species, and becauseother human-related activities may affect the status and vulnerability of each species, a reasonable and rigorous cumulative effects analysis seems an essential precursar'to any determination of negligible impact.

Based an these considerations, the Marine Mammal Commission is concerned about the basis for a negligible impact determination. The above information clearly indicates that the potential effects of SURTASS LFA operations cannot be described with certainty. In addition, scientists are presently unable to describe the abundance and distribution of many species and stocks, are unable to assess accurately and precisely the reproductive and survival rates of most species and stocks, and often are unable to attribute observed trends to specific causes, either natural or human-related, This does not mean that such effects will not occur if SURTASS LFA is authorized. Rather, it suggests that our ability to predict the effects of SURTASS LFA sonar is limited and such operations should be managed with appropriate levels of caution together with reliable monitoring systems to detect potential effects, as discussed below.

Small Numbers

Section 101(a)(5)(A) of the Marine Mammal Protection Act also requires that incidental taking authorizatfans under this provision are limited to activities that take only "small numbers" of marine mammals. The proposed rule (p. 15378) notes that the regulations promulgated by the service define "small numbers" to mean "a portion of a marine mammal species or stock whose taking would have a negligible impact an that species or stock." As the Commission has pointed but in several letters to the Service since that definition was adopted, the definition effectively eliminates the distinction between the independent requirements of section 101(a)(5)(A) concerning small numbers and negligible impacts. The discussion in the preamble of the proposed rule references the legislative history behind the 1981 amendment that created the small-take exception tc: support its position, but neglects to include a complete discussion of the relevant Congressional statements. While the Service is correct that the referenced Committee report recognized the imprecision of the term "small numbers," and was unable to offer a precise formulation in terms of numerical limits, the report also indicated a clear Congressional intent that the finding concerning small numbers is to be separate from that concerning negligible impacts. In discussing the negligible impact finding, the legislative report states that this was "an additional and separate safeguard." It further states that "[t]his additional test is meant to serve as a separate standard restricting the authority of the Secretary." Finally, the report states that taking cannot be authorized under section 101(a)(5) "[u]nless a particular activity takes only small numbers of marine mammals, and that taking has a negligible impact on the species...." (Emphasis added.) By defining "small numbers" to mean that level of taking that would have a negligible impact on the affected marine mammal stocks, the Service has melded the small numbers criterion and the negligible impact criterion into a single criterion, contrary to Congressional intent as reflected in the referenced report, Thus, while the Service's proposed finding is consistent with the regulatory definition of the term "small numbers," the Commission continues to question whether that definition comports with the underlying statutory provision- This being the case, the Marine Mammal Commission again recommends that the Service revise its regulatory definition of "small numbers" to reflect the language of, and intent behind, the statutory provision. The Marine Mammal

Commission further recommends that the Service estimate the number of marine mammals that potentially could be taken in the course of the proposed five-year authorization and provide its rationale for concluding that this constitutes a "small number."

On a related matter, regional density estimates are used to calculate the proportions of regional marine mammal populations expected to be taken incidental to the proposed action. Where data on marine mammal distribution are not available, the calculations are based on the assumption that the marine mammal species and stocks are uniformly or randomly distributed. Considerable evidence exists to indicate that marine mammal distributions are neither uniform nor random, but are determined by biological and physical oceanographic features that are also non-uniformly and non-randomly distributed. Therefore, this assumption is likely to be inaccurate and could lead to underestimation of effects. Further, the resulting calculations indicate that 5 to 10 percent or more of certain populations could be taken in Some regions. The rationale for concluding that such proportions constitute small numbers is not explained. Likewise, the rationale for using estimates of the proportions of populations rather than estimates of the number of individuals expected to be taken is not explained. Therefore, the Marine Mammal Commission recommends that if issued, the final regulations should explain the rationale for these assumptions, findings, and conclusions.

Availability for Subsistence Purposes

Section 101(a)(5)(A)(i) specifies that, before authorizing the incidental taking of marine mammals under this provision, the Service must find that "the total of such taking during each five-year (or less) period concerned will ... not have an unmitigable adverse impact on the availability of such species or stock for taking for subsistence...." The Service summarily addresses this point by preliminarily concluding that the incidental taking resulting from SURTASS LFA operations would "not have an unmitigable adverse impact on Arctic subsistence uses of marine mammals." While the Service, in its discussion of "marine mammal impact concerns" correctly points out that some species taken for subsistence (e.g., the bowhead whale) occur outside of the area where they are likely to be affected by SURTASS LFA Sonar operations, other species taken by Alaska

Natives for subsistence, including beluga whales and several pinniged species, occur within the area where **operations** could be conducted and are included in the list of species that would be covered by the authorization. For these species, the Service needs to provide some analysis to support its conclusion that there will be no unmitigable adverse impact on the availability of marine mammals for subsistence, taking into account, among other things, the possibility that the SURTASS LFA sonar could cause localized shifts in the distributions of some stocks, and thus their availability to subsistence hunters.

Least Practicable Adverse Impact

Section 101(a)(5)(A)(ii) requires that the Service prescribe such measures as necessary to ensure that the activity in question has the least practicable adverse impact on marine mammal species or stocks and their habitat. In this, case, a determination, of whether the least practicable adverse' impact would occur is difficult to determine because the activity in question is not fully described. For example, the extent of the impact may depend largely on the movement patterns of the SUKTASS LFA vessels relative to marine mammal distribution and movement. If vessels using LFA sonar move frequently among a wide range of locations, the amount of exposure at any one location would be relatively low. However, if the vessels remain in, or frequently return to, particular areas, marine mammals in those areas would be vulnerable to multiple exposures and may suffer more adverse impacts,

The proposed rule (p. 15387) indicates that there are three primary mitigation methods for marine mammals: (1) constraining operation of SURTASS LFA sonar transmissions to prevent exposure of marine, mammals to sound pressure or intensity levels exceeding 180 dB, (2) **preventing** SURTASS LFA sound intensities in excess of 180 dB within 12 nm (22 km) of any mainland or island coastline, and 3) excluding SURTASS LFA operations from offshore biologically important areas. The issue of operational constraints based on the 180 dB threshold and monitoring in the immediate vicinity of LFA projectors is discussed elsewhere in this letter.

A limit on SURTASS LFA sonar transmissions near mainland and island coastlines would undoubtedly help to reduce the likelihood that the transmissions will have significant effects

on marine mammals distributed in nearshore areas. It is not clear, however, that: the 12-nm limit would result in the least practicable adverse impact on marine mammals in these areas. The FEIS and the proposed rule (p. 15376) state that the world's oceans are to be covered by the operation of four vessels, (two in the Indian-Pacific Oceans, and two in the Atlantic Ocean). It therefore seems reasonable to assume that SURTASS LFA has detection capabilities over extensive ranges. The FEXS and the proposed rule do not include specific information on the operable range, but they indicate that this system will help detect submarines beyond the range of the weapon systems on those submarines. If SURTASS LFA is effective over entire ocean basins and over the range of current weapon systems, it presumably could operate effectively at distances far greater than 12 nm (22 km) from shore, If that is the case, then it is not clear why the Navy would need to operate SURTASS LFA at distances as close as 12 nm (22 km) from shore. Rather, it would seem that a more reasonable, practicable exclusion zone would be far greater than 12 nm (22 km). If such is the case, then the activity as described in the proposed rule will not result in the least practicable adverse impact, and additional protection could be conferred on marine mammals that tend to concentrate in nearshore waters by extending the operational boundary farther seaward.

With respect to the desiynation of offshore biologically important areas, the Navy and the National Ocean Service have identified four areas in which SURTASS LFA operations would be excluded. In addition, SURTASS LFA operations would not be conducted in the Arctic and Antarctic, as described in the proposed rule (p. 15394). The Marine Mammal Commission agrees that the four identified areas should be subject to heightened protection. However, the Commission also believes that these areas comprise only a portion of the offshore biological areas of particular importance to marine mammals.

In the proposed rule (pp. 15388-15389) the Service describes a system for expanding the number of offshore biologically important areas where use of the LFA sonar would be restricted. However, the Service indicates that it will not act on proposals or recommendations for additional areas until the ongoing rulemaking has been completed. It indicates further: tha:: (1) to be designated as biologically important, an offshorearea would have to be particularly important for breeding, feeding, or migration, and not simply an area where

marine mammals are commonly present, (2) persons or organization{? proposing designation of additional areas would be required to submit sufficient information to show that the areas are of/significant biological importance before rulemaking would be initiated; and (3) rulemaking is anticipated to take 8 to 12 months.

The deferral of action to identify additional offshore biologically, important areas as part of this rulemaking inappropriately increases the possibility 'chat the Service will authorize SURTASS LFA operations in biologically important areas where making a negligible impact finding is questionable, given available information. It is not in keeping with the statutory mandate to make a negligible impact determination in the face of this information based on the assurance that any oversights will be corrected in subsequent rulemakings. Moreover, the Service's proposed system for designating additional offshore biologically important areas, which places the burden on the public to show that offshore areas are important for marine mammal breeding, feeding, or migration, appears to be contrary to the provisions of section 101(a)(5)(B). Section 101(a)(5)(B) requires the Service to withdraw or suspend the authorization to take marine mammals under the small-take provision if, among other things, it determines that the taking "within one or more regions is having, *or may have, more than a negligible* impact *on the species or stock concerned."* (Emphasis added.) Thus, all that a proponent of an additional area is statutorily required to demonstrate is that there is a reasonable possibility that SURTASS LFA activities within the area could have more than a negligible impact on the affected marine mammal species or stocks. Once such a showing has been made, the burden shifts back to the iapplicant and/or the Service to demonstrate that allowing operations in the area does not exceed the negligible impact threshold. The Marine Mammal Commission therefore recommends that section 216.191 of the proposed regulations be revised to reflect these relative burdens of proof. That is, it should be sufficient for the proponent of a designation to meet its burden by showing that marine mammals occur in an area in above average densities (i.e., densities significantly above those used to calculate the percentages of populations that could be affected by the proposed action), suggesting that the area is important for satisfying one or more biologically significant; functions. In keeping with the requirements of Section 101(a)(5)(B), LFA sonar operations should be suspended

or prohibited in and near these areas until. it has been determined that such operations will not have more than a negligible impact on these species or stocks.

Furthermore, the Service's system for identifying and designating additional areas appears to ignore available information on marine mammal species collected by the Service and others. For example, the Service has collected information on the foraging patterns of the Hawaiian monk seal in the Northwestern Hawaiian Islands that demonstrates that the sea mounts scattered along this chain of islands and atolls are important foraging areas for this species. To protect monk seals in these areas, the Service has established a 50-nm protected species zone around the Northwestern Hawaiian Islands and the corridors between those islands. This area, however, has not been identified as' biologically important under the proposed rule. Similarly, marine mammal distribution and abundance data collected during the Acoustic Thermometry of Ocean Climate Marine Mammal Research Program appears to support designation of the Pioneer Sea Mount as an offshore biologically important area, Likewise, distribution and abundance data reported in environmental impact statements for nil and gas exploration and development offshore of southern Califaxnia (*e.g.*, the EIS for Outer Continental Shelf Sale No. 48) might be sufficient to support designation of other areas, such as the Tanner Banks and the Santa Rosa-Cortez Ridge. Data from the Navy's own Sound Surveillance System may indicate other offshore areas of biological importance. In short, the Service and others have conducted extensive surveys in offshore areas to assess the distribution and abundance of marine mammals . The information resulting from such surveys provides a basis for examining the importance of various offshore areas as potential sites for protection. Therefore, the Marine Mammal Commission recommends that if such data were not examined in developing the proposed rule, then the Service should carefully examine that data to ensure that it has considered all offshore areas possibly meriting designation for protection before proceeding with a final rule.

Finally, in the proposed rule (p. 15383), the Service states that it cannot require the Navy to undertake a particular level and type of research outside the purview of the proposed authoriiation, but that it strongly encourages and expects that: the Navy to provide a detailed plan for research to determine the impacts on species of marine mammals that

potentially may be affected by LFA sounds. In this regard, the House of Representatives' report accompanying the 1981 Marine Mammal Protection Act amendments (H. R. Report No. 97-228) states, among other things, that "... the Committee expects that persons operating under the authority of section 101(a)(5) shall engage in appropriate research designed to reduce the incidental taking of marine mammals pursuant to the specified activity concerned." This language suggests that the Service has the authority and the responsibility to require that research or monitoring capable of resolving critical uncertainties be made a condition of any incidental taking authorizations issued. Thus, the detailed research plan expected from the Navy should be provided, made public, and considered in the process of deciding whether the requested incidental taking authorization should be issued.

The need for a detailed research plan is underscored by the considerable uncertainties regarding the potential biological effects of the SURTASS LFA sonar, and by the fact that the Navy will almost certainly continue to request additional authorizations for SURTASS LFA at the end of each authorization period. The Marine Mammal Commission therefore recommends that a suitable research plan be required before an initial authorization is given, and that any reauthorization is based on a demonstration of suitable progress under that plan. This research seems necessary to ensure that existing uncertainties are resolved and that the Navy, the Service, and the public are not repeatedly confronted with the same information gaps.

Monitoring and Reporting

Both the FEIS and the *Federal* Register notice on this proposed action indicate that the purpose of monitoring is to minimize, to the greatest extent practicable, the possible adverse effects of the LFA sonar transmissions on the hearing and biologically significant behavior of marine mammals. However, the legislative history and related provisions of section 101(a)(5) of the Marine Mammal Protection Act indicate that the intent of the monitoring requirement is not to minimize the risk of possible adverse effects, but rather to confirm that animals are taken only in the numbers and by the means authorized, and that the effects of the taking on the size and productivity of the affected stocks are, in fact, negligible (Swartz and Hofman 1991). This is not to say that

the proposed'monitoring program will not contribute to reducing the potential impact of SURTASS LFA operations on marine mammals, as required under section 101(a)(5)(A)(ii)(I). Nevertheless;; the monitoring and reporting programs called for by section 101(a)(5)(A)(ii)(II) are separate requirements with a distinct purpose.

The Marine Mammal Commission is concerned that the monitoring program described in the proposed rule (p. 15388) is not adequate to provide the information necessary to (1) document how and how many marine mammals are taken incidental to the transmissions, or (2) validate the assumptions used to conclude that SWRTASS LFA operations will have only negligible impacts on marine mammals. For example, the Service states in the proposed rule (p. 15380) that behavioral effects can be expected in areas where sound levels are less than 180 dB, but also deemed it impractical to monitor such effects. Without monitoring of behaviora. effects, the Navy and the Service will have no real basis for estimating the total amount of incidental take. The difficulty of monitoring does not provide a rationale for ignoring tha need to assess potentially significant behavioral responses to SURTASS LFA, and on this basis alone-the monitoring program, as proposed, might be judged inadequate. Thus, it appears that unless augmented, the proposed monitoring program would not satisfy the intent of section 101(a)(5)(A)(ii) of the Marine Mammal Protection Act.

The Navy's proposed monitoring program consists of four elements: high-frequency marine mammal monitoring (HF'M3) sonar, visual monitoring, passive acoustic monitoring, and the correlation of stranding data with information on SUHTASS LFA operations. The proposed rule (pp. 15380, 15386, 15388) suggests that the first three of these would comprise a real-time "tripartite" monitoring system able ta detect approximately 80 percent (p. 15380) to nearly 100 percent (pp. 15386, 15388) of marine mammals within 2 km of the sound projectors. 'Accordingly, this system could provide a basis for preventing exposure of marine mammals to sound pressura or intensity levels greater than 180 dB.

The purported effectiveness of the tripartite approach assumes separate detection efficiencies of the HFM3 sonar system (70 percent effective), visual monitoring (5 percent effective), and passive acoustic monitoring (5 percent effective), and that these detection methods are additive,

resulting in'a combined efficiency of at least 80 percent. However, these detection efficiencies would be additive only if they were completely non-redundant. That is, the efficiencies would be additive only if the marine mammals detected by one component of the system would not be detected by the others, which seems unlikely. If their individual efficiencies were as stated above and these three systems were completely independent in their ability to detect marine mammals, their combined efficiency would be about 73 percent, rather than 80 percent to 100 percent. This suggests that the information in the proposed rule may overestimate the Navy's ability to detect marine mammals within 2 km of the sound source.

The HFM3 system, which itself may have effects on marine mammals, is central to the monitoring and mitigation system proposed by the Navy. *In* the proposed rule, the Service repeatedly references this system and its purported efficiency as providing monitoring or detection capability essential for ensuring that marine mammals are not exposed to sound levels greater than 180 dB. However, as the Service also points out, the presumed effectiveness of the HFM3 system (70 percent) has not been verified and the evidence for this level of efficiency has not been made available to the Service or the public. Accordingly, the Service indicates that it will not rely on the HFM3 system until such verification has occurred. In this regard, the Service is proposing that the assessment and documentation of the effectiveness of the HFM3 system be done after, rather than before, incidental taking is authorized+ This suggests that the Service would authorize incidental taking of marine mammals by SURTASS LFA operations even in the absence of an effective HFM3 system, which would seem to undermine the tripartite monitoring and mitigation effort considerably', Furthermore, the Service has not indicated in the *Federal Register* notice the standards that the HFM3 sonar will be expected to meet to be judged capable of effectively detecting different species and sizes of marine mammals in or approaching the 180 dB safety zone. The Service also has not indicated what alternative monitoring and mitigation efforts will be required if the HFM3 sonar does not meet the expected, but as yet unspecified, standards. To ensure that there is an adequate basis for detecting marine mammals near the 180-dB zone, the Marine Mammal Commission recommends the Service (1) develop minimum performance standards for the detection of marine mammals within the 180 dB safety zone, and (2) require that the Navy test and demonstrate the capability of the HFM3

sonar systemjor some other suitable detection system before the proposed regulations are finalized and a letter of authorization is issued.

The fourth element of the proposed monitoring system will be an investigation of the correlation between SURTASS LFA sonar transmissions and stranding events, While such an investigation should be conducted, it may not provide a reliable indication of the effects of such transmissions because marine mammals affected physically, physiologically, or psychologically in offshore areas far from land -are unlikely to reach and strand *on* land simply because of the distances involved. Thus, the 'utility of this approach for detecting significant effects is likely to be very low.

In view of the extensive uncertainty about the potential impacts of SURTASS LFA operations on marine mammals, the nature and extent of monitoring and reporting, both real-time and long-term, are important issues. With respect to real-time monitoring, the proposed rule indicates that such monitoring will be based on the tripartite system described above. The proposed rule (p. 15383) also indicates that real-time results of such monitoring will not be immediately available due to post-mission analysis requirements including declassification of sensitive national security information. Rather, the Navy has proposed, that monitoring results be provided annually. However, if real-time or near real-time monitoring is necessary to detect unforeseen impacts or make essential operational adjustments to ensure negligible impacts on marine mammals, it is not clear why the results could not be made available within a few days or weeks. Such data also may be useful for identifyingioffshore areas of biological importance that should be protected, and for validating assumptions upon which the proposed negligible impact determination is based. The Marine Mammal Commission is unclear why such raw data should be classified and why they could not be provided to the Service within a few days or weeks after the conclusion of each LFA training exercise conducted during the one-year periods of incidental taking authorization. Therefore, the Marine Mammal Commission recommends 'that the Service either provide better justification for the proposed reporting schedule or require that data on the species, numbers, and activities of marine mammals observed during training exercises be submitted to the Service and made publicly available within a few days or weeks after each exercise. In-depth annual reporting and analysis of

observational and related-activity data should also be required.

With respect to long-term impacts, the proposed rule (p. 15388) indicates that "[t]he Navy proposes to provide a LTM [long-term monitoring] program to conduct annual assessments of the potential cumulative impact of SURTASS LFA sonar operations an the marine environment, provide the necessary reporting to increase knowledge of the species, and to coordinate research opportunities and activities." As noted earlier, the legislative history of section 101(a)(5) of the Marine Mammal. Protection indicates that Congress intended that research requirements should be included in small-take authorizations whenever there is significant uncertainty concerning how and how many marine mammals might be affected by the activity in question. Such monitoring and assessment should include both annual assessments of the previous year's data, as well as long-term, retrospective analyses of cumulative SUKTASS LFA effects. Assessment of long-term, cumulative effects is essential because effects not apparent on the basis of a single year of data may be more obvious when examined over the long-term. That is, the power of the monitoring system to detect significant population changes should increase over time as more data become available. The nature of the planned long-'term monitoring has not been described and such information is essential tc ensure that existing uncertainties will be resolved and. that both short- and long-term impacts will be negligible.

To ensure that the essential information is collected for such long-term, retrospective analyses, the Marine Mammal Commission recommends that the Navy and the Service develop and incorporate their long-term monitoring and research strategy as part of the proposed action. As part of that research program, the Navy should maintain records and report the dates, times, and locations of each exercise, including the number, duration and times between transmissions (pings), and all observations of marine mammals made incidentally as well as a product of the required monitoring. Such recordkeeping seems especially important in view of the uncertain effects and potentially long lifetime of SURTASS LFA operations, In addition, the Marine Mammal Commission recommends that the Service require that the Navy undertake directed experimentation, as recommended in the National Research Council's May 2000 report, Marine mammals and ***low frequency sound: progress*** since 1994, to document how

representative species and age-sex classes of marine mammals respond to different types and levels of low frequency sounds. Other useful research requirements might include the following:

1. Augmentation of the proposed passive acoustic monitoring program to test for differences in the nature or frequency of marine mammal vocalizations before and after LFA sonar transmissions;

2. A routine examination of observational data collected during the LFA sonar exercises to help identify additional offshore areas of biological importance that should be protected;

3. Analyses to determine changes in the sizes, ranges, and productivities of potentially affected species and stocks from survey programs currently being conducted by the Service, the Navy, the Minerals Management Service and others.

Finally, the proposed rule indicates (p. 15388) that, to allow the Service to respond promptly to changing conditions, the Service would allow many of the mitigation, monitoring, and reporting requirements to be detailed in the Letters of Authorization (LOAs), rather than in the regulations. It also indicates that opportunity for public comment would be provided for "substantial modifications" to LOA requirements before such modifications are made, but provides no indication of what would be viewed as a substantial modification. Thus, the public and interest groups concerned about the possible cumulative effects of the proposed action are given no indication of the kinds of modifications that could or could not be instituted by the Service without their knowledge or opportunity for comment. At a minimum, the final. regulations should specify the nature of non-substantial modification that could be made without opportunity for public comment.. Further in this regard, while there may be practical reasons why the Service is proposing such an approach, we note that the statute is clear that at least some of these specific issues are to be addressed in the regulations themselves, rather than in the LOAs. Thus, the Marine Mammal Commission recommends that the Service review the proposed rule, particularly sections 216.182 (permissible methods of taking) and section 216.188 (letters of authorization), and consider ways to include the required information in the regulatory language.

If you or your staff have questions about any of the Commission's comments, please let me know.

Sincerely,

Robert H. Mattlin, Ph.D.
Executive Director

Enclosures (2)

Literature cited

Malme, C.I., P.R. Miles, C.W. Clark, P. Tyack, and J.E. Bird. 1983. Investigations of the potential effects of underwater noise from petroleum industry activities on migrating gray whale behavior/Phase I. BBN Rep. 563. Rep. from Bold, Beranek, & Newman, Inc., Cambridge, MA, for U.S. Minerals Management Service, Anchorage, AK. NTIS PB-86-174174.

Malme, C,I., P.R. Miles, C.W. Clark, P. Tyack, and J.E. Bird. 1984. Investigations of the potential effects of underwater **noise** from petroleum industry activities on migrating gray whale behavior/Phase If: January 1984 migration. BBN Rep. 536. Rep. from Bold, Beranek, & Newman, Inc., Cambridge, MA, for the U.S. Minerals Management Service, Anchorage, AK. NTIS PB-86-218377.

Richardson, W.J., C.R. Greene, C.I. Malme, and D.H. Thompson. 1995. Marine mammals and noise. Academic Press, Inc., San Diego, CA.

Ridgway, S.H., D.A. Carder, R.R. Smith, T. Kamolnick, C.E. Schlundt, and W.R. Elsberry. 1997. Behavioral responses and temporary shift in masked hearing threshold of bottlenose dolphins, *Tursiops truncatus*, to l-second tones of 141 to 201 dB re 1 µPa. Technical Report 1751, July 1997. Naval Command, Control and Ocean surveillance Center, RDT&E Division, San Diego, CA.

Swartz, S.L., and R.J. Hofman. 1991. Marine mammal and habitat:. monitoring: Requirements; Principles; Needs: and Approaches. U.S. Department of Commerce, NTIS PB91-215046,

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Comments: See letter, attached